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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/019,287	01/02/2002	Yasuyuki Kawahara	011731	1458

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EXAMINER

OH, TAYLOR V

ART UNIT	PAPER NUMBER
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1625

DATE MAILED: 10/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/019,287	Applicant(s) KAWAHARA ET AL.	
	Examiner Taylor Victor Oh	Art Unit 1625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-88 is/are pending in the application.
- 4a) Of the above claim(s) 1-5, 12-18 and 31-33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-11, 19-30 and 34-88 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Applicant's arguments with respect to claims 1-88 have been considered but are moot in view of the new ground(s) of rejection.

The Status of Claims :

Claims 1-88 are pending.

Claims 6-11 ,19-30, and 34-88 have been rejected.

Claims 1-5, 12-18, and 31-33 have been withdrawn.

DETAILED ACTION

1. The Amendment dated 6/21/04 has been received and placed of record in the file. Claims 11, 19, 20, 22-25 and 30 have been amended; newly presented claims 34-88 have been under consideration.

Priority

2. This application is a 371 of PCT/JP00/04838 filed on 07/19/2000.

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Drawings

3. None.

Claim Rejections - 35 USC § 112

Claims 6-11 ,19-30, and 34-88 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 6, 11, 19, 30, 34, 43, 44, 55, 63, 64, 75, 76, and 85-87 , the phrase “ 1 to 4 kinds of adsorbents” is recited. However, the word “ kinds “ is indefinite and vague because the claims do not describe what kinds of adsorbents have been used for the treatment. Therefore, an appropriate correction is required.

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 6-11 ,19-30, and 34-88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuda et al (U.S. 5,185,092) in view of Satoru et al (JP-07-233385) and Hiroyasu (JP-10-140170).

Fukuda et al teaches the preparation of the lubricating oil for a refrigerator in which the base oil is a diester of an aliphatic monohydric alcohol and an aliphatic dicarboxylic acid (see col. 2 ,lines 16-27) or of an aliphatic monohydric alcohol and an aromatic di or -tri carboxylic acid (see col. 3 ,lines 12-14).

Furthermore, Fukuda et al has described in details the esterification process in below (see col. 6 ,lines 35-65):

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Esters can be obtained by the esterification reaction, e.g., by esterification of alcohols and aliphatic carboxylic acid in the presence of an acid catalyst, e.g., phosphoric acid. The esters obtained by such method have a total acid number of 0.1–0.5 mg KOH/g, a peroxide number 0.1–5 meq./kg, an aldehyde number 0.1–5 mg KOH/g, a bromine index 1–100 mg/100 g, an ash content 5–50 ppm, and a moisture content 300–1000 ppm.

Further, to increase the refrigerant stability, it is necessary to reduce the peroxide number, aldehyde number and bromine index to lower values, to reduce the ash content so as to reduce sludge and the like, and to reduce the water content in order to maintain hydrolytic stability and the insulating property.

For this purpose, it is necessary to purify the above esters obtained by the normal esterification reaction and to adjust the above indices for the properties of the ester oil to a range suitable for an oil for a refrigerator. As the result, an excellent oil for refrigerator can be prepared.

It is preferable to purify organic carboxylic acid esters through contact processing with silica gel, activated alumina, activated carbon, zeolite, etc. The

In addition, the properties of the specimen oils and the test results are shown in the table below (see col. 19, lines 10–38):

TABLE 10

	Specimen oil 35	Specimen oil 36	Specimen oil 37	Specimen oil 38	Specimen oil 39	Specimen oil 40	Specimen oil 41	Specimen oil 42
Total acid number (mg KOH/g)	0.01	0.03	0.05	0.01	0.03	0.26	0.10	0.26
Peroxide number (meq./kg)	0.1	0.3	0.6	0.1	0.3	1.5	2	1.5
Aldehyde number (mg KOH/g)	0.1	0.1	0.1	0.1	0.1	2	2	2
Bromine index (mg/100 g)	1	5	7	1	5	13	10	13
Ash content (ppm)	3	4	4	3	4	16	10	16
Moisture (ppm)	100	200	200	400	450	600	600	800
Color (ASTM)	L 0.5	L 0.5	L 1.0	L 0.5	0.5	3.0	L 0.5	3.0
Volume resistivity (25° C. $\Omega \cdot \text{cm}$)	5.5×10^{13}	2.1×10^{13}	1.1×10^{13}	5.6×10^{13}	2.2×10^{13}	5.0×10^9	2.3×10^{10}	5.2×10^9
Hydrolytic stability	0.02	0.05	0.08	0.02	0.04	0.65	0.29	0.54
Total acid number (mg KOH/g)								

However, the instant invention differs from the prior art in that the claimed process is conducted in the absence of catalyst; the claimed sulfur and phosphorus

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contents are 20 ppm or less; a hydroxyl value is 3 mg KOH/g or less; the claimed aromatic adjacent dicarboxylic anhydride reactant is not employed in the process; the neutralization step is not disclosed.

Satoru et al teaches the preparation of the refrigerating -machine -oil containing mixed aliphatic esters which were obtained from the reaction of 1,4-cyclohexane carboxylic acid and the monohydric alcohol (see page 4 ,translation , paragraph 0020). Furthermore, as a result of the process, the ester has the following properties: 5-50 ppm of moisture, and the total acid number of 0.1-0.5 mg KOH/g (see page 5 ,translation , paragraph 0037). In addition, for the neutralization of the carboxylic acid after the esterification, it is recommended to use potassium hydroxide or calcium hydroxide(see page 6 ,translation , paragraph 0039).

Furthermore, Hiroyasu teaches the process of preparing a composition for refrigerator working oils in which the base oil is an ester which is obtained from reacting a linear /or branched monohydric alcohol having 1-10 carbon atoms with an aromatic tri-basic acid or its anhydride in the absence of the catalyst (see page 5 , example, paragraph 0028); the composition has an acid value of 1 mg KOH/g or lower , a hydroxyl value of 10 mg KOH/g or lower (see abstract page).

With respect to the sulfur and phosphorus contents of 20 ppm, the prior art are silent. However, the sulfur and phosphorus contents are commonly used for assessing an ester like the aforementioned properties. In order to obtain esters with certain lubricant properties, the skilled artisan in the art would have been obvious to carry out

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the sulfur and phosphorous content test so as to verify the criteria for the claimed refrigerator oil composition.

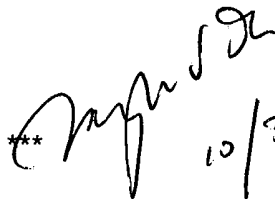
Fukuda et al expressly teaches the preparation of the lubricating oil for the refrigerator in which the base oil is the diester of an aliphatic monohydric alcohol and an aliphatic dicarboxylic acid or of an aliphatic monohydric alcohol and an aromatic di or -tri carboxylic acid. Satoru et al has also indicated that the mixed aliphatic esters obtained from the reaction of 1,4-cyclohexane carboxylic acid and the monohydric alcohol can be used for the lubricating oil for the refrigerator and the neutralization of the carboxylic acid after the esterification can be helpful for enhancing the purification process. Furthermore, Hiroyasu does teach an equivalency between the aromatic acid or its anhydride with respect to the reactant for the esterification process for making a composition for refrigerator working oils.

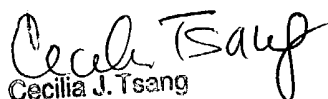
All the prior art are directed to producing the lubricating oil for the refrigerator which contains the ester products. In order to obtain the ester products with certain lubricant properties, it would have been obvious to the skilled artisan in the art to be motivated to have incorporated Hiroyasu's aromatic anhydride as the reactant as an alternative in the absence of catalyst, along with the addition of Satoru's et al neutralization step after the esterification, into Fukuda et al process. This is because the skilled artisan in the art would expect such combinations of the prior art to be successful and effective in the process of obtaining the desired ester products with claimed lubricant properties.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Taylor Victor Oh whose telephone number is 571-272-0689. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cecilia Tsang can be reached on 571-272-0562. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

 10/3/04


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